

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A bone grafting composition comprising (i) a bone graft extender comprising hollow calcium-containing microstructures and (ii) a bone mixture cancellous bone and/or de-mineralized bone matrix (DBM).
2. (Original) The composition of claim 1, wherein the microstructures are about 0.5 mm to about 6 mm in diameter.
3. (Original) The composition of claim 1, wherein the bone mixture comprises bone tissues or bone by-products.
4. (Original) The composition of claim 1, wherein the bone mixture is from about 5% to about 95% by volume of the composition.
5. (Original) The composition of claim 1, wherein the bone mixture is from about 50% to about 75% by volume of the composition.
6. (Original) The composition of claim 1, wherein the calcium-containing microstructures comprise hydroxylapatite, tribasic calcium phosphate, dicalcium phosphate, tetracalcium phosphate, calcium carbonate, calcium oxide, glass-containing calcium phosphate, or a mixture thereof.
7. (Original) The composition of claim 1, wherein the composition further comprises a bonding agent.
8. (Original) The composition of claim 7, wherein the bonding agent is a polymer.
9. (Previously presented) The composition of claim 8, wherein the polymer is selected from the group consisting of polylactic acid, polyglycolic acid, polycaprolactone, poly α -hydroxy esters, polyphosphazenes, polyanhydrides, and polypropylene fumarate.
10. (Original) The composition of claim 7, wherein the bonding agent is a calcium-containing cement.

11. (Original) The composition of claim 10, wherein the calcium-containing cement is from about 5% to about 75% by volume of the composition.

12. (Original) The composition of claim 10, wherein the calcium-containing cement is from about 10% to about 50% by volume of the composition.

13. (Original) The composition of claim 10, wherein the calcium-containing cement is calcium phosphate, calcium sulfate or a mixture thereof.

14. (Original) The composition of claim 10, wherein the calcium-containing cement comprises calcium sulfate.

15. (Withdrawn) A calcium composition comprising porous or hollow microstructures or particulate containing nitric oxide or a nitric oxide forming compound.

16. (Withdrawn) The composition of claim 15, wherein the microstructures comprise hydroxylapatite, tribasic calcium phosphate, tetracalcium phosphate, dicalcium phosphate, calcium carbonate, calcium oxide, glass-containing calcium phosphate, or a mixture thereof.

17. (Withdrawn) The composition of claim 15, wherein the microstructures comprise glass.

18. (Withdrawn) The composition of claim 17, wherein the glass contains calcium phosphate.

19. (Withdrawn) The composition of claim 15, wherein the microstructures comprise a polymer.

20. (Withdrawn) The composition of claim 15, wherein nitric oxide is contained within the composition as a gas, in a liquid or a mixture thereof.

21. (Withdrawn) The composition of claim 15, wherein the microstructures are about 250 mm to about 6 mm in diameter.

22. (Withdrawn) The composition of claim 15, wherein said composition further comprises a nitric oxide inhibitor or activator.

23. (Withdrawn) The composition of claim 15, wherein the nitric oxide forming compound is nitric oxide synthase or L-arginine.

24. (Withdrawn) The composition of claim 15, wherein the porous or hollow microstructures contain nitric oxide or nitric oxide forming compound, and wherein the nitric oxide forming compound is nitric oxide synthase.

25. (Withdrawn) The composition of claim 15, wherein the composition is coated with a bioresorbable polymer.

26. (Withdrawn) The composition of claim 25, wherein the polymer is polylactic acid, polyglycolic acid, polycaprolactone, poly α -hydroxy esters, polyphosphazenes, polyanhydrides, or polypropylene fumarate.

27. (Withdrawn) A method of delivering nitric oxide to a desired site, comprising contacting the site with the composition of claim 15.

28. (Withdrawn) The method of claim 27, wherein the composition is administered to a patient in need of nitric oxide at the desired site.

29. (Withdrawn) The method of claim 27, wherein an effective amount of nitric oxide or the nitric oxide forming compound is contained within the microstructures for use as a growth factor.

30. (Withdrawn) The method of claim 27, wherein a cytotoxic effective amount of nitric oxide or the nitric oxide forming compound is contained within the microstructures to treat a pathogen, a tumor, or an invading organism.

31. (Withdrawn) The method of claim 27, wherein an effective amount of nitric oxide or nitric oxide forming compound is contained within the microstructures to improve immune system regulation, vascular tone or neural signaling in a patient in need thereof.

32. (Withdrawn) The method of claim 27, wherein an inhibitor or activator of nitric oxide is further administered to the patient to regulate the activity of nitric oxide.

33. (Withdrawn) A method of making a calcium-containing substrate, comprising the steps of:

- (a) obtaining a composition comprising calcium phosphate;
- (b) contouring said composition into a desired shape to form a contoured composition;
- (c) culturing cells or tissues onto the contoured composition to form the calcium-containing substrate.

34. (Withdrawn) The method of claim 33, further comprising the steps of:

- (d) removing the cultured cells or tissues from the contoured composition; and
- (e) transplanting the cultured cells or tissues into a patient in need thereof.

35. (Withdrawn) The method of claim 33, further comprising the step of transplanting the calcium-containing substrate into a patient in need thereof.

36. (Withdrawn) The method according to claims 33, 34 or 35, wherein calcium phosphate is hydroxylapatite, tribasic calcium phosphate, dicalcium phosphate, tetracalcium phosphate, calcium carbonate, calcium oxide, glass-containing calcium phosphate, or a mixture thereof.

37. (Withdrawn) The method according to claims 33, 34 or 35, wherein said composition is contoured by tape casting, glass forming, or cad-cam processing.

38. (Withdrawn) The method of claim 33, wherein said contoured composition is fired prior to step (c).

39. (Withdrawn) The method according to claims 33, 34 or 35, wherein the desired shape is obtained from a patient by computer aided tomography to form a mold of the desired shape.

40. (Withdrawn) The method of claim 33, further comprising the step of administering a decalcifying agent to dissolve the calcium after step (c).

41. (Withdrawn) The method of claim 33, wherein the cells or tissues can be cultured on both sides of the contoured composition.

42. (Withdrawn) The method of claim 41, wherein one cell or tissue type is cultured on one side of the contoured composition and a second cell or tissue type is cultured on a second side of the contoured composition.

43. (Withdrawn) The method according to claims 37 or 39, wherein the contoured composition is formed by layers of cast tape.